NuIPC

cPCI-6830 series

6U CompactPCI

Dual Tualatin / Pentium-III CPU Module

Recycled Paper

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Detailed Company Information			
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Questions			
Product Model			
Environment to Use	OS: Computer Brand: M/B: CPU: Chipset: BIOS: Video Card: Network Interface Card: Other:		
Detail Description			
Suggestions to ADLINK			

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How to Use This Guide

This manual is intended to assist users to configure the cPCI-6830 6U Compact Dual Tualatin CPU system controller. It is divided into 5 chapters.

Chapter 1, "Introduction", gives an overview of the product features, applications, and specifications.

Chapter 2, "Connectors and Jumpers", this chapter outlines all the connectors and its pin definitions.

Chapter 3, "Getting Started", this chapter gives a summary of what is required to setup an operational system using the cPCI-6830. Hardware installation and BIOS overview is discuss.

Chapter 4, "Driver Installation", provides step-by-step instructions of how to install the software drivers successfully.

Chapter 5, "Utilities," explains the operation of the WDT, PXE booting and Hardware Doctor .

1

Introduction

The cPCI-6830 is positioned within the 6U cPCI product line as the next generation host CPU board with the highest computing performance powered by dual Intel Tualatin/Pentium III CPU. The CPU module supports a front side bus (FSB) of 133MHz and a CPU clock of 1.26GHz featuring 64-bit/66MHz cPCI bus with up to 3GB high performance DDR host SDRAM support.

The cPCI-6830 provides s tandard I/Os including RS-232, Printer Port, USB, EIDE, Triple Ethernets, removable CompactFlash socket, VGA and optional AC97 audio interface. The cPCI-6830 is designed to meet the needs of applications which require the highest computing performance and high reliability. It's the ideal solution for telecommunications, Internet, and industrial control applications.

The cPCI-6830 occupies a single 6U high Eurocard slot. Though the cPCI-6830 is highly integrated, its capabilities can be extended with optional boards available from ADLINK. Expansion boards are available to add IDE daughter boards such as CompactFlash. For more information about options and accessories, please visit ADLINKS web page at http://www.adlinktech.com.tw

This chapter is designed to give you an overview of the cPCI-6830 CPU module. The chapter covers the following topics:

- Unpacking and Checklist
- Features
- Specifications

1.1 Unpacking Checklist

Check the shipping carton for any damages. If the shipping carton and contents are damaged, notify the dealer for a replacement. Retain the shipping carton and packing material for inspection by the dealer. Obtain authorization before returning any product to ADLINK.

Check the following items are included in the package, if there is any missing items, contact your dealer:

- The cPCI-6830 module (May be equipped with different speed or capacity of CPU, RAM, and HDD).
- This User's Manual
- ADLINK CD
- cPCI-R6830 Rear I/O transition board is optional and may not be included in the package

Note: The package of the cPCI-6830 OEM version non-standard configuration, functionality or package may vary according to the different configuration requests

CAUTION: This board must be protected from static discharge and physical shock. Never remove any of the socketed parts except at a static-free workstation. Use the anti-static bag shipped with the product to handle the board. Wear a wrist strap grounded through one of the system's ESD Ground jacks when servicing system components.

1.2 Features

- PICMG 2.0 CompactPCI Specification R3.0 Compliant
- PICMG 2.1 CompactPCI Hot-Swap Specification R2.0 Compliant
- PICMG 2.16 CompactPCI Packet Switching Backplane R1.0 Compliant
- Standard 6U form factor with 2-slot (8TE/HP) space
- Design for Dual Intel Socket-370 Tualatin/Pentium-III CPU
- Supports 66/100/133MHz Front Side Bus (FSB) frequency
- Supports up to Intel FC-PGA2 Tualatin CPU at 1.26GHz
- Three 184-pin DIMM sockets support up to 3GB DDR266 SDRAM with ECC support
- Supports 64-bit CompactPCI with 66MHz
- Dual EIDE interface.
- Supports 4 bus-master PCI devices on 64-bit/66MHz CompactPCI bus peripheral slots
- Supports 7 bus-master PCI devices on 64/32-bit @33MHz CompactPCI bus peripheral slots
- Build-in two USB ports, two serial ports, one parallel port
- Optional VGA with resolution up to 1600x1200 in 32-bit true color
- On-board triple 10/100Mbps Ethernet ports, two RJ-45 port on front faceplate by Intel 82559 controller with one RJ-45 port on rear I/O transition module by VT8233 built-in controller.
- Supports Intel pre-boot execution environment (PXE) for remote boot.
- Optional SoundBlaster Pro compatible AC97 audio on rear I/O transition module (only for big quantity OEM project)

1.3 Functional Blocks and Main Board

The following topics provide an overview of the cPCI-6830's main features as shown in the functional block diagram below and also the main board.

Functional Block Diagram

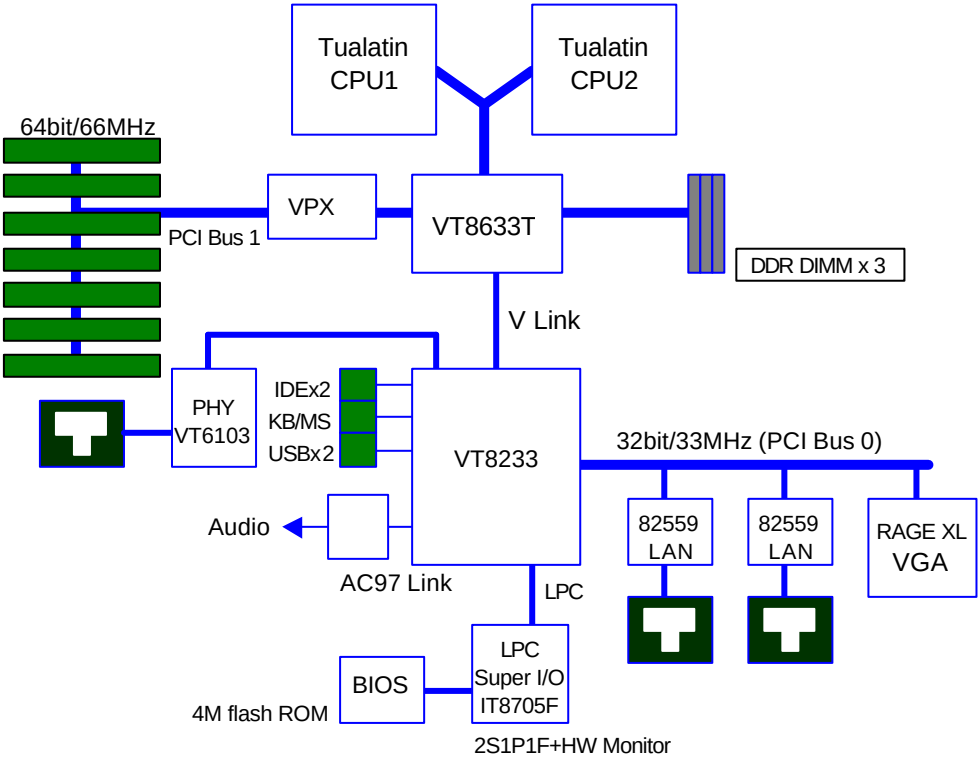


Figure 1: Functional Block Diagram

Main Board Drawing

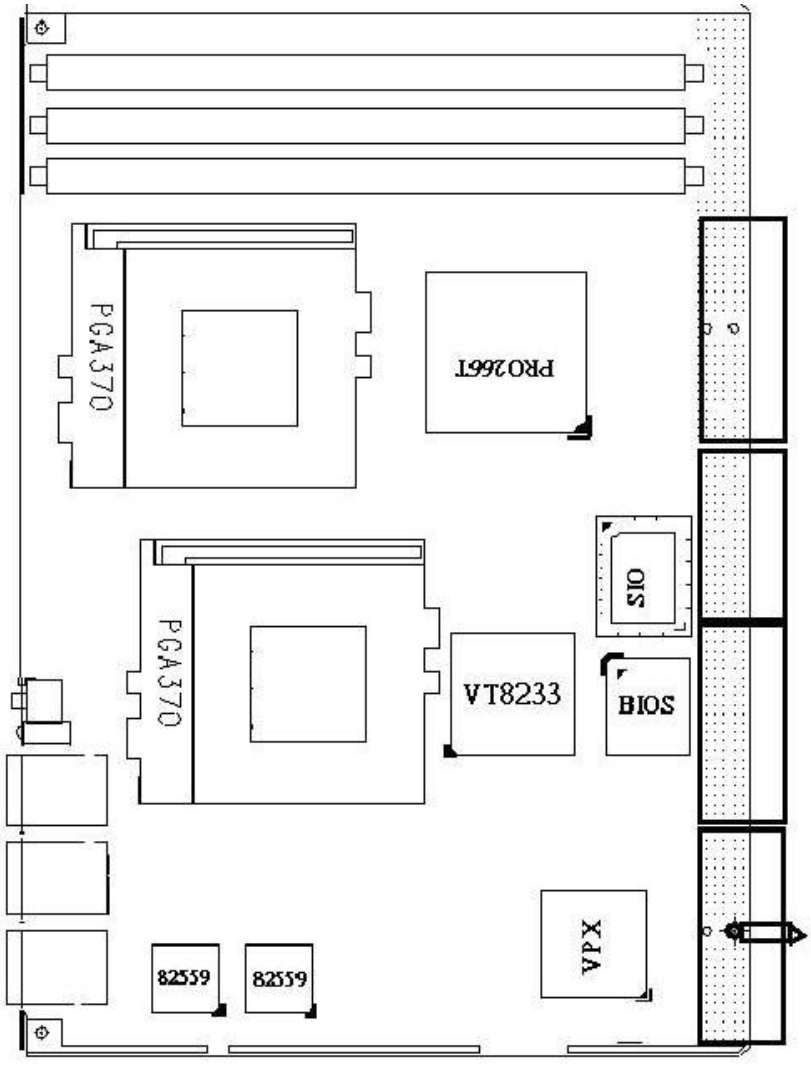


Figure 2: Main Board Drawing

1.3.1 CompactPCI Bus Interface

The cPCI-6830 operates in a 6U CompactPCI system. The CompactPCI standard is electrically identical to the PCI local bus standard but has been enhanced to work in harsh environments and support more peripheral slots. Additionally, when used in a Hot Swap compliant backplane and in accordance with the *CompactPCI Hot Swap Specification, PICMG 2.1, Version 1.0* the cPCI-6830 supports hosting hot swappable peripherals in a powered system. The cPCI-6830 can also function in a standard (non-Hot Swap) CompactPCI system without live insertion and extraction capability.

1.3.2 Pentium III or Tualatin Processor

The cPCI-6830 uses the Intel Pentium III or Tualatin Processor. These processors are highly integrated assembly containing immediate system-level support. The 256 / 512 KB (depending on model of processor) on-die transfer L2 cache is integrated with the CPU, eliminating the need for separate components and improving performance.

The Pentium III (Coppermine) processor runs at a core speed of up to 1GHz, with a Front Side Bus (FSB) speed of 100 or 133 MHz. The Tualatin processor core speed is 1.4GHz with the FSB at 133 MHz. The VIA PRO266T DDR sets the FSB operation at 66/100/133 MHz (auto-selected).

1.3.3 Interrupts

The enhanced interrupt controller supported by the VT8233 provides the cPCI-6830 with a total of 15 interrupt inputs. Interrupt controller features include support for:

- Level-triggered and edge-triggered inputs
- Individual input masking
- Fixed and rotating priorities

Interrupt sources include:

- Counter/Timers
- Serial I/O
- Keyboard
- Printer Port
- Floppy disk
- IDE interface
- Real-Time Clock
- On-board PCI devices

Enhanced capabilities include the ability to configure each interrupt level for active high going edge or active low-level inputs.

1.3.4 PICMG 2.1 Hot Swap Support

The cPCI-6830 Hot-Swap capability allows non-system slot boards to be added or removed while the system is powered up. The cPCI-6830 provides independent clocks for each slot and access to the ENUM# signal on the backplane are compatible to PICMG 2.1 Hot Swap Specification. However, the cPCI-6830 itself is not hot swappable.

The hot swappable system is dependent on system controller, peripheral cards, backplane, operating system supporting, driver supporting and application supporting.

1.3.5 Power Ramp Circuitry

The cPCI-6830 features a power controller with power ramp circuitry to allow the board's voltages to be ramped in a controlled fashion. The power ramp circuitry eliminates any large voltage or current spikes caused by hot swapping boards. This controlled ramping is a requirement of the *CompactPCI Hot Swap specification, PICMG 2.1, Version 1.0*. The cPCI-6830's power controller unconditionally resets the board when it detects that the 3.3V, 5V, and 12V supplies are below an acceptable operating limit. These limits are defined as 4.75V (5V supply), 3.0V (3.3V supply), and 10.0V (+12V supply).

1.3.6 Watchdog Timer

The watchdog timer optionally monitors system operation and can be programmed for different timeout periods (from 1 seconds to 255 seconds or 1 minute to 255 minutes). It is a two-stage watchdog, meaning that it can be enabled to produce a non-maskable interrupt (NMI) or a "CPU init" before it generates a Reset. Failure to strobe the watchdog timer within the programmed time period may result in an NMI, a reset request, or both. A register bit can be enabled to indicate if the watchdog timer caused the reset event. This watchdog timer register is cleared on power-up, enabling system software to take appropriate action if the watchdog generated the reboot. See Chapter 7, "Watchdog Timer," for more information, including sample code.

1.3.7 Ethernet Interfaces

The cPCI-6830 provides three 10/100Mbps Ethernet interface. Two Ethernet interface are supplied via the Intel 82559 chip, the other one is supplied via the VIA VT6103 PHY chip, which is connected to the VT8233. Every port is assigned a unique static MAC Address. The board’s Ethernet Addresses are displayed on three labels attached to the board. The integrated Ethernet controller enabling/disabling depends on the existence of VT6103. The BIOS have a selection in the CMOS setup to disable these three LAN ports.

1.3.8 Serial I/O

Two serial ports are supported on cPCI-6830. The EIA232 drivers and receivers reside on board. COM2 is a DB9 connector on the rear panel and COM1 is available as aRJ45 connector on thefront panel. Both ports will be configured as DTE. Firmware will initialize the two serial ports as COM1 and COM2 with ISA I/O base addresses of 3F8h and 2F8h respectively. This default configuration also assigns COM1 to IRQ4 and COM2 to IRQ3. The cPCI-6830 serial controller resides in the ITE IT8705F Super I/O device.

1.3.9 IEEE-1284 Parallel Port/Printer Interface

The parallel I/O interface signals are routed to a DB25 connector on the rear I/O module. This port supports the full IEEE-1284 specifications and provides the basic printer interface.

Firmware will initialize the parallel port as LPT1 with ISA I/O base address of 378h. This default configuration also assigns the parallel port to IRQ7. The printer interface mode (Normal, Extended, EPP, or ECP) is selectable through the BIOS SETUP utility with the ITE IT8705F Super I/O device managing the cPCI-6830's parallel port.

1.3.10 Universal Serial Bus (USB)

The Universal Serial Bus (USB) provides a common interface to slower-speed peripherals. Functions such as keyboard, serial ports, printer port, and mouse ports can be consolidated into USB, simplifying the cabling requirements of computers. The cPCI-6830 provides two USB ports on the rear I/O module and is controlled by the VT8233 device.

1.3.11 IDE Controller and Floppy Interface Controller

The cPCI-6830 includes an IDE Controller (in the VT8233) and a Floppy Disk Controller (in the IT8705). The IDE Controller provides support for internal or external IDE drives. Signals are available at the IDE connectors CN5 and CN6. IDE1 (CN6) can be connected to either a 40 or 44-pin pin header while IDE2 is only available in a 40-pin connection. The FDD Controller provides support for an external FDD drives. Signals are available at the FDD connector CN8 and are routed to a 34-pin pin header.

1.3.12 Keyboard/Mouse Controller

The cPCI-6830 includes an on-board PC/AT keyboard and mouse controller. The keyboard/mouse signals are available through the PS/2 circular DIN on the front panel. The cPCI-6830's keyboard/mouse controller resides in the ITE VT8233 device

1.3.13 Software

The cPCI-6830 includes the ADLINK NuIPC Embedded BIOS loaded in on-board flash. The BIOS is user-configurable to boot an operating system from local flash memory, a fixed or floppy drive, or over a network.

The cPCI-6830 is compatible with all major PC operating systems. ADLINK provides support, which may include additional drivers for ADLINK peripherals. Software device drivers for the cPCI-6830 may be found in the ADLINK CD.

1.4 Specifications

General CompactPCI Features

- PCI Rev.2.1 compliant
- PICMG 2.0 CompactPCI Rev. 3.0 compliant.
- PICMG 2.1 CompactPCI Hot-Swap Specification R2.0 compliant
- PICMG 2.16 CompactPCI Packet Switch Backplane R1.0 Compliant

Form Factor

- Standard 6U CompactPCI (board size: 233.35mm x 160mm)
- Dual-space width (8TE/HP, 40.64mm)

CPU/Cache

- Intel Socket-370 FC-PGA2 Pentium-III (Tualatin) with 512KB on-die L2 cache @ full-core speed & 133MHz FSB, CPU speed up to 1.26GHz
- Intel Socket-370 FC-PGA Pentium III with 256KB on-die L2 cache @ full-core speed & 133/100MHz FSB, CPU speed up to 1GHz
- Intel Socket-370 FC-PGA Celeron with 128KB on-die L2 cache @ full-core speed & 66/100MHz FSB, CPU speed up to 1GHz
- Front side bus (FSB) frequency: 66/100/133MHz

Chipset

- VIA PRO266T chipset
- VIA VT8653 north bridge and VT8233 south bridge
- VIA VT8101 VPX 64-bit/66MHz PCI bus controller

Host Memory

- Three 184-pin DDR SDRAM DIMM sockets support up to 3.0GB host memory
- Supports un-buffered or buffered DDR200/DDR266 SDRAM (512Mb x8 or x16)
- Supports 2.5V DDR DIMMs in single-side or double-side
- Supports DDR DIMM with ECC for DRAM integrity

BIOS

- Phoenix/Award PnP BIOS with 4Mb Flash ROM
- BIOS write protection, provide anti-virus capability
- Customized power-on screen (for OEM project)
- DMI BIOS Support: Desktop Management Interface (DMI) allows users to download system hardware-level information such as CPU type, CPU speed, internal/external frequencies and memory size.
- On-board Ethernet ports and hardware monitoring can be disabled by BIOS setting
- Remote Console: setup console redirection to serial port (terminal mode) with CMOS setup access
- ACPI 1.0, APM 1.2, PC 99 and PC 99A compliant

Real -Time Clock and Nonvolatile Memory

- Build-in VIA VT8233 south bridge RTC
- Battery-backed memory is used for BIOS configuration
- Separate 3V coin cell CR2032 battery used for RTC and nonvolatile memory

On Board Peripherals

- Integrated in VIA VT8233 south bridge
- Bus Master EIDE controller, dual EIDE ATA-66/100 interfaces for up to four EIDE devices, including HDD, ATAPI CD-ROM, LS120, ZIP, Flash Disk and CompactFlash drives.
- Two USB ports on rear faceplate with USB Spec Rev. 1.1 compliant
- USB ports support 0.5A@5V for peripherals with individual over-current protection
- Optional AC-97 audio CODEC Realtek ACL-200 SoundBlaster Pro compatible audio on rear I/O transition module

On Board Supper I/O

- ITE Super I/O controller IT8705 with WDT and Hardware Monitoring
- Two 16C550 UART, compatible RS-232 serial ports with ESD protection to 2KV. COM1 connected through a RJ-45 connector on the front faceplate and COM2 is connected through a DB-9 connector on rear I/O board
- One high-speed bi-directional IEEE-1284 SPP/EPP/ECP parallel port with ESD protection to 4KV and downstream device protection to 30V is routed to rear I/O faceplate
- One 34-pin floppy interface goes to rear I/O board, support two floppy drives (360KB, 720KB, 1.2MB, 1.44MB, 2.88MB)
- Two 6-pin circular mini-DIN connectors are located on the rear I/O faceplate for keyboard and PS/2 mouse connections

Watchdog Timer

- Programmable I/O port 2Eh and 2Fh to configure watchdog timer, programmable timer 1~255 seconds or 1~255 minutes
- Bundled easy-programming library for DOS, Windows 95, 98, NT, 2000

Hardware Monitoring

- Built-in IT8705, monitoring two CPU temperatures, two CPU fans, system temperature and DC Voltages

VGA Display

- PCI VGA controller ATI RageXL, with build-in 8M VRAM
- VGA display via DB-15 connector on front faceplate
- High performance, 128-bit, single clock cycle 2D drawing engine
- High performance, power managed 3D acceleration engine
- ACPI, VESA DPMS and VESA DDC 2b compliant
- Supports up to 1600x1200 VGA display resolution with 32-bit true color, non-interlaced
- RAMDAC Latch-up protection
- Driver supporting: Windows95/98/ME/NT/2000, Linux

On-board Ethernet Port 1 and 2

- RJ-45 connector on front faceplate
- Intel 82559 high performance Ethernet controllers
- IEEE 802.3 10Base-T/100Base-TX compatible
- IEEE 802.3u auto-negotiation support
- IEEE 802.3x 100Base-TX flow control support
- WFM 2.0 compliant
- Supports Intel pre-boot execution environment (PXE) for remote boot of WindowsNT/2000 and Linux
- Driver supports: DOS, Novell, Windows95/98/ME/NT/2000, Linux, SCO Unix, Sun Solaris, QNX, VxWorks

On-board Ethernet Port 3

- RJ-45 connector on the faceplate of rear I/O transition board
- Build-in VT8233 high performance Ethernet controller with LSI L80225 PHY
- IEEE 802.3 10Base-T/100Base-TX compatible
- IEEE 802.3u auto-negotiation support
- IEEE 802.3x 100Base-TX flow control support
- Driver supports: DOS, Novell, Windows95/98/ME/NT/2000, Linux

PCI Buses

- 32-bit/33MHz PCI bus 0 for on-board PCI devices (LAN and Mini-PCI socket)
- 64-bit/66MHz PCI bus 1 from VIA VT8101 VPX controller
- Supports 4 bus-master PCI devices on 64-bit/66MHz CompactPCI bus peripheral slots
- Supports 7 bus-master PCI devices on 64/32-bit @33MHz CompactPCI bus peripheral slots

Flash Disk Supporting

- Supports flash disk (DOM or Flash2000, up to 1GB) on IDE
- Supports CompactFlash Type-II (optional adaptor required)

Front Panel LEDs and switch

- Power status (green)
- IDE activity indicator (amber)
- All Ethernet port: 10/100Mbps (amber), activity (green)
- Flush tact switch for system reset

Environment

- Operating temperature: 0 to 60°C
- Storage temperature: -20 to 80°C
- Humidity: 5% to 95% non-condensed
- Shock: 15G peak-to-peak, 11ms duration, non-operation
- Vibration:
  - ✓ Non-operation: 1.88Grms, 5-500Hz, each axis
  - ✓ Operation: 0.5Grms, 5-500Hz, each axis, with 2.5" HDD

Safety Certificate and Test

- CE, FCC
- All plastic material used on board are all UL-94V certified
- Design for NEBS Level 3

Power Consumption

Configurations	+5V	+3.3V	+12V	-12V
Single P-III 1GHz CPU with 1.5GHz RAM	7.8A	2.5A	0.564A	0mA
Dual Tualatin/P-III 1.4GHz CPU with 3GB RAM	14.6A	3.11A	0.704A	0mA

Note: The above values are the measured power consumption for SBC with CPU, CPU cooler and RAM only; the CPU is running under 100% loading. The powers for all the other peripheral devices such as add-on cards, HDD, or CD-ROM are not included.

1.5 Peripheral Connectivity

I/O	Front			Rear	
	Faceplate	Board	RI/O	Board	Faceplate
Serial Port (COM1)	Y (RJ-45)	---	J4	---	---
Serial Port (COM2)	---	---	J4	---	Y (DB-9)
Parallel Port (LPT1)	---	---	J3	---	Y (DB-25)
Keyboard/Mouse	Y (PS/2)	Y (6-pin)	J3	---	Y (PS/2)
Floppy	---	---	J3	Y (34-pin)	---
ATA-66/100 IDE 1	---	---	J3	Y (40-pin & 44-pin) 2.5" ATA HDD Housing	---
ATA-66/100 IDE 2	---	---	J4	Y (40-pin)	---
USB A/B	---	---	J4	---	Y
10/100Mb Ethernet Port 1*	Y (RJ-45)	---	J3, 2.16	---	Y (RJ-45)
10/100Mb Ethernet Port 2*	Y (RJ-45)	---	J3, 2.16	---	---
10/100Mb Ethernet Port 3*	---	---	J4, MII	---	Y (RJ-45)
VGA (mPCI-8750)**	Y (DB-15)	---	J4	---	Y (DB-15)
CompactFlash (via daughter board)	---	---	---	Y (CF-II)	---
Speaker (Buzzer)	---	Buzzer	J3	Y (2-pin)	---
LEDs	Y	---		---	Y
Reset button	Y	---	J2	---	---

Table 1: Peripheral Connectivity Table

***Note:** All the functions, which go to both front panel and rear panel, are only activated on one side, not both.

****Note:** VGA function is available by mounting the mPCI-8750 onto the on-board mini-PCI socket.

2

Jumpers and Connectors

This chapter will familiarize the user with the cPCI-6830 before getting started, it will provide information about the board layout, connector definitions and jumper setup, This will includes the following information:

- PXI-3710 board outline and illustration
- PXI-3710 connectors pin assignments
- PXI-3710 jumpers setting

2.1 cPCI-6830 Board Outline and Illustratoin

2.1.1 cPCI-6830 Front and top View

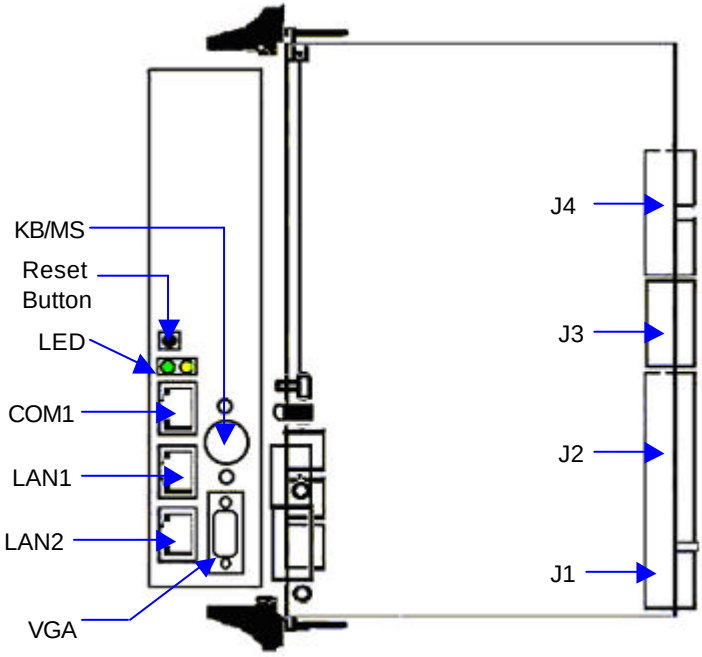


Figure 3: CPCI-6830 Front and Top View

2.1.2 cPCI-R6830 Top View

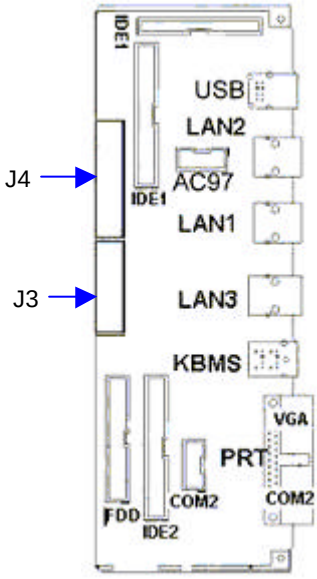


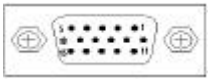
Figure 4: cPCI-R6830 Top View

2.2 cPCI-6830 Connector Pin Assignments

A detailed description and pin-out for each connector is given in the following section.

2.2.1 VGA Connector

The cPCI-6830 provides standard analog SVGA output on the rear I/O panel. The video function is provided via the ATI Rage XL VGA chip. The BIOS has a selection in the CMOS setup to disable the onboard video to allow the user to use a PCI video as the primary video controller. The BIOS also has a selection to disable the onboard video to allow the user to reclaim the memory for other applications without having to add another video card.

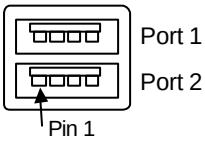


Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
N.C.	9	10	GND
N.C.	11	12	N.C.
HSYNC	13	14	VSYNC
NC	15		

Table 2: VGA Connector Pin Definition

2.2.2 USB Connectors

The cPCI-6830 supports 2 USB serial ports on the rear I/O panel. Additional ports can be added through the use of external USB hubs. USB allows for the easy addition of peripherals such as mouse, keyboard, speakers, etc. Transfer rates up to 12Mb/s are supported. High-speed connections (12Mb/s) require shielded cables. The cPCI-6770 provides the standard 0.5A at 5V to the peripherals and is protected by a single polyswitch.

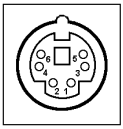


Pin	Signal Name
1	Vcc
2	USB-
3	USB+
4	GND

Table 3: USB Connectors Pin Definition

2.2.3 PS/2 Keyboard & Mouse Connector

Two 6-pin circular DIN connectors are located on the rear I/O panel of cPCI-6830 for the keyboard and the mouse connections. The power provided to the keyboard and mouse is protected by a Polyswitch rated at 1.1A

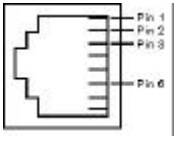


Pin	Signal Name (Mouse)	Signal Name (Keyboard)
1	Mouse data	Keyboard data
2	N.C.	N.C.
3	GND	GND
4	5V	5V
5	Mouse Clock	Keyboard clock
6	N.C.	N.C.

Table 4: PS/2 Keyboard & Mouse Connector Pin definition

2.2.4 Ethernet (RJ-45) Connector

The cPCI-6830 provides three 10/100Mbps Ethernet interface. Two Ethernet interface are supplied via the Intel 82559 chip, the other one is supplied via the VIA VT6103 PHY chip, which is connected to the VT8233. The Ethernet interface is routed to an RJ45/LED all in one Connector on the front and rear panel. Every port is assigned a unique static MAC Address. The board's Ethernet Addresses are displayed on three labels attached to the board. LEDs drive signals for Ethernet link status and activity are routed to the same connector. The BIOS have a selection in the CMOS setup to disable these three LAN ports.



Pin	Signal Name
1	TD+
2	TD-
3	RD+
4	Termination CAP
5	Termination CAP
6	RD-
7	NC
8	GND

Table 5: Ethernet Connector Pin Definition

Amber LED 10/100Mbps Status	Description
OFF	10Mbps transfer rate
ON	100Mbps transfer rate

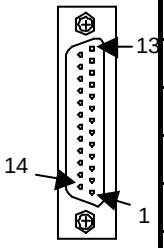
Table 6: Ethernet Amber LED Status

Green LED Link/Activity Status	Description
OFF	No link
ON	Connecting
Blinking	Active/Data transferring

Table 7: Ethernet Green LED Status

2.3.5 Parallel Port Connector

The parallel I/O interface signals are routed to a DB25 on the rear panel. The port supports the full IEEE-1284 specifications. It provides the basic printer interface. Firmware will initialize the parallel port as LPT1 with ISA I/O base address of 378h. This default configuration also assigns the parallel port to IRQ7.



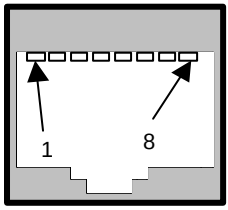
Signal Name	Pin	Pin	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	GND
PD4, parallel data 4	6	19	GND
PD5, parallel data 5	7	20	GND
PD6, parallel data 6	8	21	GND
PD7, parallel data 7	9	22	GND
ACK, acknowledge	10	23	GND
Busy	11	24	GND
Paper empty	12	25	GND
Select	13	26	N/C

Table 8: Parallel Connector Pin Definition

2.2.6 Serial Ports

Two serial ports are supported on the cPCI-6830. The EIA232 drivers and receivers reside on the board. COM2 is routed to a DB9 connector on the rear panel, while COM1 is available through a RJ45 connector on the front panel. Both ports are configured as DTE with firmware initializing the two serial ports as COM1 and COM2 with ISA I/O base addresses of 3F8h and 2F8h respectively. This default configuration also assigns COM1 to IRQ4 and COM2 to IRQ3

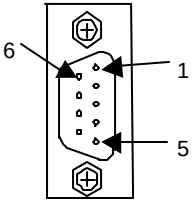
COM1



Pin	Signal Name
1	DCD, Data carrier detect
2	RTS, Request to send
3	GND, GND
4	TXD, Transmit data
5	RXD, Receive data
6	GND, GND
7	CTS, Clear to send
8	DTR, Data terminal ready

Table 9: COM1 Pin Definition

COM2

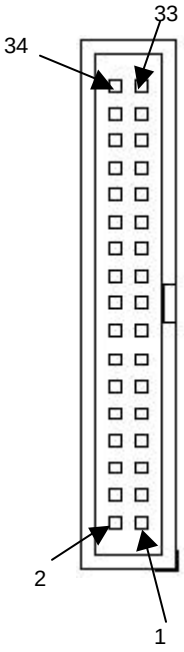


Pin	Signal Name
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator

Table 10: COM2 Pin Definition

2.2.7 Floppy Connector

The floppy interface signals are routed to a 34-pin header on the rear of the cPCI-6830. This port allows for the connection of up to 2 floppy drives.



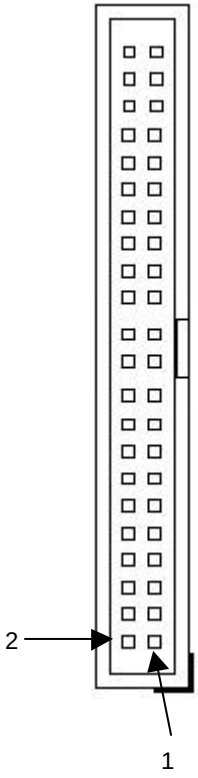
Pin	Function	Pin	Function
1	Ground	2	Extended Density
3	Ground	4	No Connect
5	-	6	Data Rate
7	Ground	8	Index
9	Ground	10	Motor A Select
11	Ground	12	Drive B Select
13	Ground	14	Drive A Select
15	Ground	16	Motor B Select
17	Ground	18	Step Direction
19	Ground	20	Step Pulse
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 0
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1
33	Ground	34	Disk Change

Table 11: Floppy Connector Pin Definition

2.2.8 IDE Connector

The IDE interface connector is used for connection with IDE devices such as hard disk drives and CD-ROMs. There are two EIDE interfaces supporting up to 4 IDE devices on the cPCI-6830. The IDE interface signals are routed to a 44-pin header.

The default mode is "compatibility mode," meaning that the interface uses the PC-AT legacy addresses of F0h-1F7h, with 3F6h and interrupt IRQ14 for the primary channel. The secondary channel uses I/O addresses 170h-177h, 376h and interrupt IRQ15. No memory addresses are used.



Signal	Pin	Pin	Signal
BRSTDRVJ	1	2	GND
DDP7	3	4	DDP8
DDP6	5	6	DDP9
DDP5	7	8	DDP10
DDP4	9	10	DDP11
DDP3	11	12	DDP12
DDP2	13	14	DDP13
DDP1	15	16	DDP14
DDP0	17	18	DDP15
GND	19	20	NC
PDDREQ	21	22	GND
PDIOWJ	23	24	GND
PDIORJ	25	26	GND
PIORDY	27	28	PCSEL
PDDACKJ	29	30	GND
IRQ14	31	32	NC
DAP1	33	34	NC
DAP0	35	36	DAP2
CS1P	37	38	CS3PJ
IDEACTPJ	39	40	GND
+5V	41	42	+5V
GND	43	44	NC

Table 12: IDE Connector Pin Definition

2.2.9 CompactPCI P1/J1: 64-bit PCI

J1 is a 110-pin, 2 mm x 2 mm, female CompactPCI connector. Rows 12-14 is used for connector keying. See the "J1 CompactPCI Bus Connector Pin-out" table below for pin definitions.

Pin	Z	A	B	C	D	E	F
25	GND	+5V	REQ64#	ENUM#	+3.3V	+5V	GND
24	GND	AD[1]	+5V	V(I/O)	AD[0]	ACK64#	GND
23	GND	+3.3V	AD[4]	AD[3]	+5V	AD[2]	GND
22	GND	AD[7]	GND	+3.3V	AD[6]	AD[5]	GND
21	GND	+3.3V	AD[9]	AD[8]	GND	C/BE[0]#	GND
20	GND	AD[12]	GND	V(I/O)	AD[11]	AD[10]	GND
19	GND	+3.3V	AD[15]	AD[14]	GND	AD[13]	GND
18	GND	SERR#	GND	+3.3V	PAR	C/BE[1]#	GND
17	GND	+3.3V	IPMB_SCL	IPMB_SDA	GND	PERR#	GND
16	GND	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
15	GND	+3.3V	FRAME#	IRDY#	GND	TRDY#	GND
12-14	Key						
11	GND	AD[18]	AD[17]	AD[16]	GND	C/BE[2]#	GND
10	GND	AD[21]	GND	+3.3V	AD[20]	AD[19]	GND
9	GND	C/BE[3]#	GND	AD[23]	GND	AD[22]	GND
8	GND	AD[26]	GND	V(I/O)	AD[25]	AD[24]	GND
7	GND	AD[30]	AD[29]	AD[28]	GND	AD[27]	GND
6	GND	REQ#	GND	+3.3V	CLK	AD[31]	GND
5	GND	BRSVP1A5	BRSVP1B5	PCIRST#	GND	GNT#	GND
4	GND	IPMB_PWR	HEALTHY#	V(I/O)	INTP	INTS	GND
3	GND	INTA#	INTB#	INTC#	+5V	INTD#	GND
2	GND	TCK	+5V	TMS	TDO	TDI	GND
1	GND	+5V	-12V	TRST#	+12V	+5V	GND
Pin	Z	A	B	C	D	E	F

Table 13: CompactPCI J1 Pin Definition

2.2.10 CompactPCI P2/J2: 64-bit PCI arbitration signals

J2 is a 110-pin 2 mm x 2 mm female CompactPCI connector. See the "J2 CompactPCI Bus Connector Pin-out" table for pin definitions.

Pin	Z	A	B	C	D	E	F
22	GND	GA4	GA3	GA2	GA1	GA0	GND
21	GND	CLK6	GND	RSV	RSV	RSV	GND
20	GND	CLK5	GND	RSV	GND	RSV	GND
19	GND	GND	GND	RSV	RSV	RSV	GND
18	GND	BRSVP2A18	BRSVP2B18	BRSVP2C18	GND	BRSVP2E18	GND
17	GND	BRSVP2A17	GND	PRST#	REQ6#	GNT6#	GND
16	GND	BRSVP2A16	BRSVP2B16	DEG#	GND	BRSVP2E16	GND
15	GND	BRSVP2A15	GND	FAL#	REQ5#	GNT5#	GND
14	GND	AD[35]	AD[34]	AD[33]	GND	AD[32]	GND
13	GND	AD[38]	GND	V(I/O)	AD[37]	AD[36]	GND
12	GND	AD[42]	AD[41]	AD[40]	GND	AD[39]	GND
11	GND	AD[45]	GND	V(I/O)	AD[44]	AD[43]	GND
10	GND	AD[49]	AD[48]	AD[47]	GND	AD[46]	GND
9	GND	AD[52]	GND	V(I/O)	AD[51]	AD[50]	GND
8	GND	AD[56]	AD[55]	AD[54]	GND	AD[53]	GND
7	GND	AD[59]	GND	V(I/O)	AD[58]	AD[57]	GND
6	GND	AD[63]	AD[62]	AD[61]	GND	AD[60]	GND
5	GND	C/BE[5]#	GND	V(I/O)	C/BE[4]#	PAR64	GND
4	GND	V(I/O)	BRSVP2B4	C/BE[7]#	GND	C/BE[6]#	GND
3	GND	CLK4	GND	GNT3#	REQ4#	GNT4#	GND
2	GND	CLK2	CLK3	SYSEN#	GNT2#	REQ3#	GND
1	GND	CLK1	GND	REQ1#	GNT1#	REQ2#	GND
Pin	**Z**	**A**	**B**	**C**	**D**	**E**	**F**

Table 14: CompactPCI J2 Pin Definition

2.2.11 cPCI P3/J3 Connector

Pin	Z	A	B	C	D	E	F
19	GND	GND	GND	GND	GND	GND	GND
18	GND	LPa_DA+/TX+	LPa_DA-/TX-	GND	LPa_DC+	LPa-DC-	GND
17	GND	LPa_DB+/RX+	LPa_DB-/RX-	GND	LPa_DD+	LPa-DD-	GND
16	GND	LPb_DA+/TX+	LPb_DA-/TX-	GND	LPb_DC+	LPb-DC-	GND
15	GND	LPb_DB+/RX+	LPb_DB-/RX-	GND	LPb_DD+	LPb-DD-	GND
14	GND	GND	GND	GND	GND	GND	GND
13	GND	PDACT#	PDCS1#	PDCS3#	PDA0	PDA1	GND
12	GND	PPDIAG	PDCS16#	PDIRQ14	PDA1	PDDACK#	GND
11	GND	PDDREQ	PDIOW#	GND	PDIORDY	PDIOR#	GND
10	GND	PDD13	PDD1	PDD14	PDD0	PDD5	GND
9	GND	PDD4	PDD11	PDD3	PDD12	PDD2	GND
8	GND	PDD8	PDD6	PDD9	PDD5	PDD10	GND
7	GND	PDRST#	PDD7	OC1#	USBD1-	USBD1+	GND
6	GND	TRACK0#	WRTPRT#	RDATA#	HDSEL#	DSKCHG#	GND
5	GND	MTR1#	FDIR#	STEP#	WDATA#	WGATE#	GND
4	GND	DRATE0	INDEX#	MTR0#	DS1#	DS0#	GND
3	GND	MSDATA	MSCLK	KBDATA	KBCLK	RPM	GND
2	GND	RI1#	DTR1#	CTS1#	PCBEEP	+5V	GND
1	GND	TXD1	RTS#	RXD1	DSR1#	DCD1#	GND
Pin	**Z**	**A**	**B**	**C**	**D**	**E**	**F**

Table 15: cPCI P3/J3 Connector Pin Assignment

2.2.12 CompactPCI P4/J4 Connector

Pin	Z	A	B	C	D	E	F
25	GND	+5V	SDD1	SDD0	+3.3V	+5V	GND
24	GND	SDD4	+5V	V(I/O)	SDD3	SDD2	GND
23	GND	+3.3V	SDD7	SDD6	+5V	SDD5	GND
22	GND	SDD10	GND	+3.3V	SDD9	SDD8	GND
21	GND	+3.3V	SDD14	SDD13	SDD12	SDD11	GND
20	GND	SDIRQ15	GND	V(I/O)	SDRST#	SDD15	GND
19	GND	+3.3V	SDDREQ	SDDIORDY	GND	SDIOR#	GND
18	GND	SDCS1#	PP5	PP6	SDCS3#	SDDIAG	GND
17	GND	SDCS16#	SDA2	SDDACK#	PACK#	SDACT#	GND
16	GND	SDIOW#	PP7	PP4	SDA0	SDA1	GND
15	GND	PINIT#	PP0	PP1	PP2	PP3	GND
12-14	Key						
11	GND	ACSDIN0	ACSDIN1	ACSDOUT	GND	BITCLK	GND
10	GND	MRXDV	GND	+3.3V	ACRST#	ACSYNC	GND
9	GND	MRXD3	GND	MRXERR	GND	MRXCLK	GND
8	GND	MIICOL	GND	MRXD0	MRXD1	MRXD2	GND
7	GND	MIITXEN	MIIDIO	MIIDCK	GND	MIICRS	GND
6	GND	MIITXD2	GND	+3.3V	MIITXD3	MTXCLK	GND
5	GND	USBP1-	USBP1+	MIITXD0	GND	MIITXD1	GND
4	GND	USBP0-	USBP0+	+2.5V	OCJ0	OCJ1	GND
3	GND	DDCCLK	HSYNC	GREEN	+5V	RED	GND
2	GND	SLCTIN#	PE	DDCDATA	VSYNC	BLUE	GND
1	GND	BUSYP	AUTOFD#	ERRORP#	SLCT	STROB#	GND
Pin	Z	A	B	C	D	E	F

Table 16: CompactPCI P4/J4 Connector Pin Assignment

2.3 cPCI-6830 Jumper Setting

The cPCI-6830 has been designed for maximum flexibility and can be configured for specific applications. Most configuration options are selected through the BIOS Setup utility. Some options cannot be software controlled and are configured with jumpers and dipswitches.

2.3.1 Switch and Jumper Pins

The cPCI-6830 contains a push-button switch on the faceplate and one set of jumper pins on the main board and a pair of dipswitches located on the rear I/O module. The switch and jumpers are listed and briefly described in the "Switch Cross-Reference" table below.

Switch Cross-Reference Table

Switch	Function
SW1 (Main Board	Reset
JP1	Clear CMOS Content
SW1 (Rear I/O)	Enable/Disable LAN1 and LAN2 for rear I/O access
SW2 (Rear I/O)	Enable/Disable LAN1 and LAN2 for rear I/O access

Table 17: Switch Cross-Reference Table

2.4 Switch Description

2.4.1 SW1 (Reset)

SW1 is a push-button on the front panel of the cPCI-6830. Pressing SW1 issues a hard reset. Reset is discussed in more detail in Chapter 4.

2.4.2 Clear CMOS

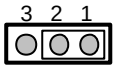
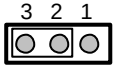
Status	CPCI-6830 JP1
Normal operation 1-2 (Default)	
Clear CMOS 2-3	

Table 18: Clear CMOS RTC RAM

The CMOS RAM data for real time clock (RTC) contains the date / time and password information. The CMOS is powered by the button cell battery when the system is power off.

To erase the CMOS RAM data:

1. Unplug the PXI-3710.
2. Short pins 2 and 3 of JP1. Then reinstall the jumper back to normal location.
3. Plug PXI-3710 back to the chassis. Turn the power on.

2.4.3 LAN1 and LAN2 Dipswitches on RTM

The cPCI-6830 supports LAN1 and LAN2 on both front and rear I/O. Front and rear I/O cannot be access simultaneously and is enabled by HW switches SW1 and SW2 on the rear I/O board. The rear I/O LAN has a transformer on board. The ethernet port has a unique static MAC Address and is assigned by setting the dipswitches SW1 and SW2. The table below shows how to set the dipswitches to enable either front or rear LAN2.

	Front Panel Access	Rear Panel Access
LAN1 (SW1)	ALL OFF	ALL ON
LAN2 (SW2)	ALL OFF	ALL ON

Table 19: Setting LAN1 and LAN2 Access

Note: All switches in S2 or S3 bank must all be either ON or OFF. Front and rear LAN2 cannot be access simultaneously

3

Getting Started

This chapter gives a summary of what is required to setup an operational system using the cPCI-6830. Hardware installation and BIOS overview is discuss.

3.1 CPU Installation

The cPCI-6830 CPU module supports a dual Intel Socket 370 FC-PGA Tualatin/Pentium-III, CPU with a front side bus (FSB) of 100/133 MHz. Users need to install high efficient CPU fan/cooler to guarantee the systems stability.

The Socket 370 connector uses a standard FC-PGA socket connector. To install the CPU, insert it to the socket by aligning the notch of the Socket 370 CPU with the one of the FC-PGA socket.

Note: Ensure that the CPU heat sink and the CPU top surface are in tight contact to avoid CPU overheating problem that would cause your system to hang or crash. The CPU heat sink and fan should be installed tightly together. A FAN with speed sensor is recommended

3.2 Memory Installation

There are three 184-pin DIMM sockets: DIM1,DIM2 and DIM3. The memory modules can be pre-installed and shipped with the board. If the DIMM is shipped with cPCI-6830, then you can skip this section.

To install memory on to DM1 socket, please follow the following procedures carefully:

1. Ensure the cPCI system is powered off. Remove the cPCI-6830 from chassis.
2. Hold the DIMM and have its edge connector at a slight angle then insert into DIM1 socket. Note that the DIMM is keyed.
3. Push the SO-DIMM into the connector vertically until it snaps into place and is firmly seated.
4. Check to make sure the SO-DIMM is inserted securely.
5. Repeat these steps again for DIM2 and DIM3

3.3 HDD Installation

The cPCI-6830 is equipped with a slim-type HDD mounting bracket where a 2.5 inches IDE drive can be seated. The HDD is pre-installed when the equipment is shipped. However, if users wish not to install a HDD, please contact your ADLINK dealer and ask not to install the HDD.

You may purchase off the shelf 2.5-inch HDD from the market. Due to space limitation and for better ventilation consideration, low profile 2.5-inch HDD no thicker than 9.5mm is recommended.

3.3.1 HDD Installation for cPCI-6830

Find the HDD accessory pack inside your original package. (Users purchasing the OEM model, non-standard, customized or special configuration model, the HDD accessory package may not be included as part of the packaging. Please contact ADLINK dealers or sales representatives to purchase this accessory pack P/N: 58-00023-000.)

1. Check the master/slave setting of your 2.5" ATA HDD
2. Screw the HDD to the drive-mounting bracket. Please note the orientation of the HDD. The HDD's pin #1 must match the location of IDE connector pin #1
3. Install the HDD with the mounting bracket plate on the module on the solder side of slot one.
4. Using three copper stand-offs , screws on the HDD and tighten the HDD to the module.
5. Connect the 44-pin HDD cable (44-pin), check if pin #1 of the IDE connector, cable and the HDD are matched

3.3 BIOS Configuration Overview

This topic presents an introduction to the Phoenix/Award PnP BIOS Setup Utility. For more detailed information about the BIOS and other utilities, see the BIOS Manual.

The BIOS has many separately configurable features. These features are selected by running the built-in Setup utility. System configuration settings are saved in a portion of the battery-backed RAM in the real-time clock device and are used by the BIOS to initialize the system at boot up or reset. The configuration is protected by a checksum word for system integrity.

To access the Setup utility, press the "Del" key during the system RAM check at boot time. When Setup runs, an interactive configuration screen displays.

Setup parameters are divided into different categories. The available categories are listed in a menu. The parameters within the highlighted (current) category are listed in the bottom portion of the Setup screen. Context sensitive help is displayed in the right portion of the screen for each parameter.

Use the arrow keys to select a category from the menu. To display a submenu, highlight the category and then press the "Enter" key.

3.4 Operating System Installation

For more detailed information about your operating system, refer to the documentation provided by the operating system vendor.

Install peripheral devices. CompactPCI devices are automatically configured by the BIOS during the boot sequence.

Most operating systems require initial installation on a hard drive from a floppy or CDROM drive. These devices should be configured, installed, and tested with the supplied drivers before attempting to load the new operating system.

Read the release notes and installation documentation provided by the operating system vendor. Be sure to read any *README* files or documents provided on the distribution disks, as these typically note documentation discrepancies or compatibility problems.

Select the appropriate boot device order in the SETUP boot menu depending on the OS installation media used. For example, if the OS includes a bootable installation floppy, select Floppy as the first boot device and reboot the system with the installation floppy installed in the floppy drive. (Note that if the installation requires a non-bootable CD-ROM, it is necessary to boot an OS with the proper CD-ROM drivers in order to access the CD-ROM drive).

Proceed with the OS installation as directed, being sure to select appropriate device types if prompted. Refer to the appropriate hardware manuals for specific device types and compatibility modes of ADLINK NuIPC products.

When installation is complete, reboot the system and set the boot device order in the SETUP boot menu appropriately.

4

Driver Installation

To install the drivers for the cPCI-8630, refer to the installation information in this chapter. Basic information is presented in this section, however, for more detailed installation information for non-Windows Operating Systems, refer to the extensive explanation inside the ADLINK CD. The drivers are located in the following directories of the CD-Rom:

Chipset driver	\CHIPDRV\Chipset\VIA_Chip
VGA/AGP relative driver	\CHIPDRV\VGA\ATI
LAN relative driver	\CHIPDRV\LAN\82559
	\CHIPDRV\LAN\VT8233
Watchdog relative library	\CHIPDRV\WDT

As the Bus-mastering IDE drivers are automatically installed by most Windows based operating systems, it will not be described.

Since Windows NT is a non plug-and-play OS, a reminder of some useful tips for installing Windows NT drivers are suggested:

1. Install the LAN driver before installing any service pack.
2. Install the VGA/AGP driver after installing the service pack. Make sure your service pack does support AGP. Service pack 6 or higher is recommend.
3. If Windows NT boots with a warning message, check the Event Viewer to view the source generating the warning message. If strange phenomena's occur and it can't be solved, re-install the Windows NT service pack, then install the drivers in a different sequence.

4.1 Chipset Drivers Installation

This section describes the installation procedures for the VIA Pro266T Chipset driver. All associated drivers are located in the ADLINK CD directory: ***X:\CHIPDRV\Chipset\VIA_Chip***, where X: is the location of the CD-ROM drive. Chipset drivers for Windows 98/95 and Windows 2000 are Included.

For Windows NT users, the VIA IDE Bus Mastering driver must be the only bus-mastering driver installed in the system.

4.1.1 Driver Installation on Windows 2000

Windows 2000 will attempt to install a standard Chipset driver automatically. To guarantee compatibility, manually install the most updated Chipset driver, which is stored in the ADLINK CD. After installing Windows 2000, update to the most updated driver using the following procedures

1. Boot Windows 2000, Click ***Start***. Select ***Window Explorer*** then select the following ADLINK CD directory X***:\CHIPDRV\Chipset\VIA_Chip***.
2. Double-click on the **setup** icon.
3. Click **"NEXT"** in the WELCOME window.
4. Click **"YES"** in the VIA Service Pack 1 README window.
5. Select "Normal Install" in 4 in 1 Setup Mode Option Window than click **"NEXT"**.
6. Click **"NEXT"** in the Setup Components window.
7. Select "Install VIA PCI IDE Bus Driver" Than Click **"NEXT"**.
8. Select "Install AGP 4X/133 Driver" Click **"NEXT"**.
9. Restart System

4.1.2 Driver Installation on Windows 98

Windows 98 will attempt to install a standard Chipset driver automatically. To guarantee compatibility, manually install the most updated Chipset driver, which is stored in the ADLINK CD. After installing Windows 2000, update to the most updated driver using the following procedures

1. Boot Windows 98, Click ***Star***t. Select ***Window Explorer*** then select the following ADLINK CD directory ***X:\CHIPDRV\Chipset\VIA_Chip***.
2. Double-click on the setup icon.
3. Click **"NEXT"** in the WELCOME window.
4. Click **"YES"** in the VIA Service Pack 1 README window.
5. Select "Normal Install" in 4 in 1 Setup Mode Options Window than click **"NEXT"**.
6. Click **"NEXT"** in Setup Components window.
7. Select "Install VIA PCI IDE Bus Driver" Than Click **"NEXT"**.
8. Select "Install AGP 4X/133 Driver" Click **"NEXT"**.
9. Restart System

4.1.3 Driver Installation on Windows NT

Windows NT will attempt to install a standard Chipset driver automatically. To guarantee compatibility, manually install the most updated Chipset driver, which is stored in the ADLINK CD. After installing Windows NT, update to the most updated driver using the following procedures.

1. Boot Windows NT, Click ***Star***t. Select ***Window Explorer*** then select the following ADLINK CD directory ***X:\CHIPDRV\Chipset\VIA_Chip***.
2. Double-click on the setup icon.
3. Click **"NEXT"** in the WELCOME window.
4. Click **"YES"** in the VIA Service Pack 1 README window.
5. Select "Normal Install" in 4 in 1 Setup Mode Options Window than click **"NEXT"**.
6. Click **"NEXT"** in Setup Components window.
7. Select "Install VIA PCI IDE Bus Driver" Than Click **"NEXT"**.
8. Restart System

Note: For Windows NT users, the VIA IDE Bus Mastering driver must be the only bus-mastering driver installed in the system.

4.2 VGA Driver Installation

This section briefly describes the VGA driver installation for the onboard VGA controller ***ATI Rage XL***. All associated drivers are located in the ADLINK CD directory: ***X:\CHIPDRV\VGA\ATI***, where X: is the location of the CD-ROM drive. VGA drivers for Windows 98/95 and Windows 2000 are Included.

4.2.1 VGA Driver Installation for Windows 98/2000/NT

Windows 98/2000/NT will attempt to install a standard Chipset driver automatically. To guarantee compatibility, manually install the most updated Chipset driver, which is stored in the ADLINK CD. After installing Windows 98/2000/NT, update to the most updated driver using the following procedures

1. Boot Windows 98/2000/NT, and then run the program ***X:\CHIPDRV\VGA\ATI\SETUP.EXE***
2. The VGA driver will automatically be installed into the system.
3. Restart the system.

Note: After installing the VGA/AGP drivers, and you discover that the driver does not work. This may be caused as a result of not installing the Windows NT service pack beforehand. Ensure to install Windows NT service pack 6 or higher version to enable AGP capability.

4.3 LAN Driver Installation

This section describes the LAN driver installation procedures for the onboard Ethernet controller ***Intel 82559*** and ***VIA VT8233***. Both the Intel 82559 and VT8233 are 32-bit 10/100MBps Ethernet controllers for PCI local bus-compliant PCs. It supports the bus mastering architecture, and Auto-negotiation features which makes it possible to combine a common Ethernet cable (RJ-45 connector with twisted-pair cabling) for use with both 10Mbps and 100Mbps connection. Drivers are available in the ADLINK CD located under ***X:\CHIPDRV\LAN\82559 or X:\CHIPDRV\LAN\VT8233***, where X: is the letter of the CD-ROM drive.

4.3.1 Software and Driver Support

The 82559 and VT8233 drivers support the following Operating Systems or platforms:

- Windows 98, Windows 95, Windows 2000, Windows NT
- Novell Netware, DOS Setup for Novell NetWare DOS
- UNIX, OS2, Linux

All the above drivers are included in the ADLINK CD. In the following section, driver installation for Windows 98, Windows 2000, and Windows NT are outlined. For driver installation of non-Windows Operating Systems, refer to the readme file inside the CD.

4.3.2 INTEL 82559 Driver Installation on Windows 2000

Windows 2000 will attempt to install a standard LAN driver automatically. To guarantee compatibility, manually install the most updated LAN driver, which is stored in the ADLINK CD. After installing Windows 2000, update to the most updated driver using the following procedures

1. Boot Windows 2000, Click ***Star***t. Select ***Settings*** then double-click on the ***Control Panel***.
2. Double-click ***System*** icon, click ***Hardware*** tab, then click ***Device Manager*** button.
3. Double-click ***Network Adapters*** entry, Double-click the ***Intel PRO 100+ Management Adapter*** entry.
4. Click ***Driver*** tab, then click ***Update Driver…*** button.
5. An Upgrade Device Driver Wizard window will appear, click ***Next***>.
6. Select ***Display a list of ...*** and click ***Next***>. The next window may show a list of hardware models.
7. Insert the CD and click ***Have Disk***.
8. Browse the LSI 53C895 driver in the following path: ***X:\CHIPDRV\LAN\82559***, highlight ***oemsetup.inf***, click ***Open***, then click ***OK***.
9. Highlight the model: ***Intel PRO 100+ Management Adapter,*** then click ***NEXT***>. An Update Driver Warning window may pop up, click ***Yes*** to continue.
10. Click ***NEXT>*** button, a Wizard summary window will appear.
11. Click ***Finish***, then the ***CLOSE*** button.

4.3.3 VIA VT8233 Driver Installation on Windows 2000

Windows 2000 will attempt to install a standard LAN driver automatically. To guarantee compatibility, manually install the most updated LAN driver, which is stored in the ADLINK CD. After installing Windows 2000, update to the most updated driver using the following procedures

1. Boot Windows 2000, Click ***Start***. Select ***Settings*** then double-click the ***Control Pane***l.
2. Double-click ***System*** icon, click ***Hardware*** tab, click ***Device Manager*** button.
3. Double-click ***Network Adapters*** entry, Double-click the **Ethernet Controller** entry.
4. Click ***Driver*** tab, then click ***Update Driver…*** button.
5. An Upgrade Device Driver Wizard window will appear, click ***Next***>.
6. Select ***Display a list of ...*** and click ***Next***>. The next window may show a list of hardware models.
7. Insert the CD and click ***Have Dis***k.
8. Browse the VT8233 driver in the following path: ***X:\CHIPDRV\LAN\VT8233***, highlight ***oemsetup.inf***, click ***Open***, then click ***OK***.
9. Highlight model: ***VIA PCI 10/100MB Fast Ethernet Adapter,*** then click ***NEXT***>. An Update Driver Warning window may pop up, click ***Yes*** to continue.
10. Click ***NEXT>*** button, a Wizard summary window will appear.
11. Click the ***Finish*** button, and then ***CLOSE*** to finish the installation.

4.3.4 Intel 82559 Driver Installation on Windows 98

Windows 98 will attempt to install a standard LAN driver automatically. To guarantee compatibility, manually install the most updated LAN driver, which is stored in the ADLINK CD. After installing Windows 98, update to the most updated driver using the following procedures.

1. Boot Windows 98, Click ***Start***. Select ***Settings*** then double-click the ***Control Pane***l.
2. Double-click on the ***System*** icon, click on the ***Device Manager*** tab.
3. Double-click on the Network Adapters entry; select the Intel PRO 100+ Management Adapter entry. Click the Properties button.
4. Click on the ***Driver*** button, then click ***Update Driver…*** button.
5. An Update Device Driver Wizard window appears, click NEXT
6. Select ***Display a list of ...*** and click ***NEX***T. The next window allows the user to specify a specific path. Insert the CD and click ***Have Dis***k.
7. Browse the 82559 driver in the following path: ***X:\CHIPDRV\LAN\82559,*** highlight **net82557.inf,** click ***OK***. The ***Update Wizard*** displays a message indicating it has found the driver. Click ***OK*** again to update the driver.

Note: Windows 98 may ask you to insert the original Windows 98 CD to install the LAN protocols.

8. Click ***NEXT*** button, then the Wizard summary window appears.
9. Click the *Finish* button, then restart the computer to activate the new driver.

4.3.5 VIA VT8233 Driver Installation on Windows 98

Windows 98 will attempt to install a standard LAN driver automatically. To guarantee compatibility, manually install the most updated LAN driver, which is stored in the ADLINK CD. After installing Windows 98, update to the most updated driver using the following procedures..

1. Boot Windows 98, Click ***Start***. Select ***Settings*** then double-click the ***Control Pane***l.
2. Double-click on the ***System*** icon, click on the ***Device Manager*** tab.
3. Double-click on the ***Network Adapters*** entry; select the ***Ethernet Controller*** entry. Click the ***Properties*** button.
4. Click on the ***Driver*** button, then click ***Update Driver…*** button.
5. An ***Update Device Driver Wizard*** will start, click NEXT
6. Select ***Display a list of ...*** and click ***NEX***T. The next window allows the user to specify a specific path. Insert the CD and click ***Have Disk***.
7. Browse the VT8233 driver in the following path: ***X:\CHIPDRV\LAN\VT8233,*** highlight ***oemsetup.inf*****;** click ***OK***. The ***Update Wizard*** displays a message indicating it has found the driver. Click ***OK*** again to update the driver.

Note: Windows 98 may ask you to insert the original Windows 98 CD to install the LAN protocols.

8. Click ***NEXT*** button, then the Wizard summary window appears.
9. Click ***Finish*** button, then restart the computer to active the new driver.

4.3.6 Intel 82559 Driver Installation on Windows NT

Before installing the LAN driver on Windows NT, copy the LAN driver files in the CD to a floppy diskette. Insert a new diskette into drive ***A:*** then type the following batch command under a DOS environment to copy the relative NT LAN drivers ***X:\CHIPDRV\LAN\100PDISK\Makedisk\Makedisk NT.***

Windows NT may ask to install a LAN driver from its own library of drivers. To guarantee compatibility, manually updated the LAN driver, which comes with the ADLINK CD. After installing Windows NT, update to the new driver using the following procedures.

1. In the ***Control Panel***, double-click on the ***Network*** icon, a ***Network Configuration*** window will appear. Click ***Yes***.
2. In the ***Network Setup Wizard***, click ***Next***>, click the ***Select From List...*** button.
3. Insert the LAN driver floppy diskette into drive ***A:*** and click ***Have Disk***.
4. In the dialog box of Insert Disk window, type in ***A:*** then Click ***OK***.
5. An OEM Selection Options window pops up, click ***OK,*** and then click ***Next***>.
6. Select the necessary Network Protocols, and click ***Next***>.
7. Select the necessary Network Services, and click ***Next***>.
8. Continue to click ***Next***> until Window NT Setup dialog box pops up. Type in ***D:\i386*** (drive D:\ is assumed to be where WinNT resides) in the dialog box, then insert the original Windows NT CD, click ***Continue***.
9. Click ***OK*** when the setup is completed.
10. Reboot the computer.

4.3.7 VIA VT8233 Driver Installation on Windows NT

Windows NT may ask to install a LAN driver from its own library of drivers. To guarantee compatibility, manually updated the LAN driver, which comes with the ADLINK CD. After installing Windows NT, update to the new driver using the following procedures.

1. From the ***Control Pane***l, double-click the ***Network*** icon, a Network Configuration window will pops up, click **Adapters**.
2. Click **Add**.
3. Insert the LAN driver CD-ROM, and click **Have Disk**.
4. In the dialog box of ***Insert Disk*** window, type in ***X:\CHIPDRV\LAN\VT8233***, and then click ***OK***.
5. An OEM Selection Options window pops up, Select ***VIA PCI Fast Ethernet Adapter*** Driver, click ***OK***, and then click ***Next***>.
6. Select necessary Network Protocols, and click ***Next***>.
7. Select necessary Network Services, and click ***Next***>.
8. Continue to click ***Next***> until Window NT Setup dialog box pops up. Type in ***D:\i386*** (drive D:\ is assumed to be where WinNT resides) in the dialog box, then insert the original Windows NT CD, click ***Continue***
9. Click ***OK*** when the setup is completed.
10. Reboot the computer.

5

Utilities

This chapter explains the operation of the cPCI-6830's watchdog timer. It provides an overview of watchdog operation and features, as well as a sample code to help you learn how the watchdog timer works.

5.1 Watchdog Timer Overview

The primary function of the watchdog timer is to monitor the cPCI-6830's operation and take corrective action if the software fails to function as programmed. The major features of the watchdog timer are:

- Two-stage
- Enabled and disabled through software control
- Armed and strobed through software control

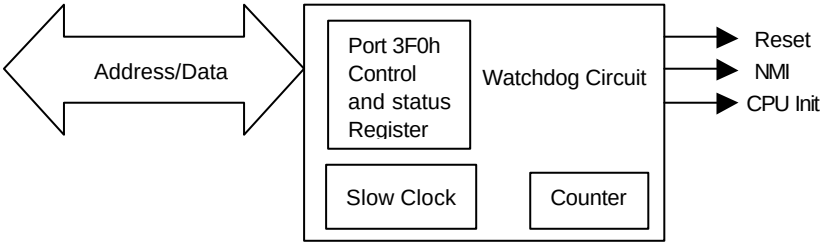


Figure 5: Watchdog Timer Architecture

The cPCI-6830's custom watchdog timer circuit is implemented in a programmable logic device. The watchdog timer contains a "Control and Status Register". The register allows the BIOS or user applications to determine if a watchdog time out was the source of a particular reset.

The watchdog timer drives the First and Second Stages as follows:

The watchdog times out (First Stage) after a selected timeout interval.

NMI or INIT (software selectable) is driven high.

A hard reset occurs (Second Stage).

The timeout period is 1– 255 seconds or 1 – 255 minutes. The watchdog is normally strobed by reading the Watchdog Register (3F0h). This clears the counter. Writes to this register also clear the counter.

5.1.1 Using the Watchdog in an Application

The following topic is provided to help you learn how to use the watchdog in an application. The watchdog's Reset function is described. A sample code is provided. The Watchdog Reset is controlled through the watchdog's "Control and Status Register".

Watchdog Reset

An application using the reset feature enables the watchdog reset, sets the terminal count period, and then periodically strobes the watchdog to keep it from resetting the system. If a strobe is missed, the watchdog times out and resets the system hardware.
The example shown below will reset the system after 15 seconds
ADLINK provides other examples and various sub functions for

WDT Programming

In order to simplify the programming code, ADLINK has provided a sub function for programmers to implement with their software. For DOS, Windows 95 or 98 and Window NT, the sub function format can be as shown below:

Out_port (int IOport_number, int Counter_value)

IOport_number:0x3F0 -->W83977EF's configuration port.

0x2E -->W83627HF's configuration port.

Counter_value: 0 ~ 15300 (255 minutes)

(write a zero to disable the timer)

Under DOS, Windows 95 or 98

Create a project program name `wdt.cpp` under Turbo C/C++.

Under Windows NT

The library installation procedure:

(1) Run the setup program under NT environment.

(2) Reboot the system.

You can also write your own DLL by referring to the DOS sourced ADLINK has provided.

5.2 Hardware Doctor Utility

This section introduces the Hardware Doctor Utility that comes with the CPU board in conjunction with the onboard hardware monitoring function. The section describes the functions of the utility.

Hardware Doctor is a self-diagnostic system for PC's and must be used with ITE IT8705 IC series products. It helps to protect the PC Hardware by monitoring several critical items including Power Supply Voltage, CPU Fan speed, and CPU & System temperature. These items are important to the operation of the system; errors may result in permanent damage to the PC. If any of the mention items are out of its normal operation range, a warning message will appear and alert the user to take appropriate measures to correct the abnormality.

The Hardware Doctor utility supports Windows 98 and Windows NT. The software comes with the ADLINK CD and is located under the directory: *X:\Utility\HWDoctor\I2C\WIN98* and *X:\Utility\HWDoctor\I2C\NT4.*

To install the Hardware Doctor utility, execute HI2C-98.exe or HI2C-NT.exe respectively under Windows 98 or Windows NT.

For a detail user's manual, refer the HWDoctor.PDF file under *X:\Utility\HWDoctor\WIN98\W8627\.*

5.3 Intel Preboot Execution Environment (PXE)

The cPCI-6830 series supports Intel Preboot Execution Environment (PXE), which provides the capability of boot-up or executing an OS installation through the Ethernet ports. There should be a DHCP server in the network with one or more servers running PXE and MTFTP services. It could be a Windows NT or Windows 2000 server running DHCP, PXE and MTFTP service or a dedicated DHCP server with one or more additional server running PXE and MTFTP service. This section describes the major items required for building a network environment with PXE support.

1. Setup a DHCP server with PXE tag configuration.
2. Install the PXE and MTFTP services
3. Make boot image file on PXE server (that is the boot server).
4. Enable the PXE boot function on the client computer.

For more detailed information, please refer to pdkrel30.pdf under the directory *X:\Utility\PXE_PDK.*

Warranty Policy

Thank you for choosing ADLINK. To understand your rights and enjoy all the after-sales services we offer, please read the following carefully.

1. Before using ADLINK's products, please read the user manual and follow the instructions exactly. When sending in damaged products for repair, please attach an RMA application form.
2. All ADLINK products come with a two-year guarantee, free of repair charge.
    - The warranty period starts from the product's shipment date from ADLINK's factory
    - Peripherals and third-party products not manufactured by ADLINK will be covered by the original manufacturers' warranty
    - End users requiring maintenance services should contact their local dealers. Local warranty conditions will depend on the local dealers
3. Our repair service does not cover the two-year warranty, if damages are cause by the following events:
    a. Damage caused by not following instructions in the user's manual.
    b. Damage caused by carelessness on the users' part during product transportation.
    c. Damage caused by fire, earthquakes, floods, lightening, pollution and incorrect usage of voltage transformers.
    d. Damage caused by unsuitable storage environments with high temperatures, high humidity or volatile chemicals.
    e. Damage caused by leakage of battery fluid when changing batteries.
    f. Damages from improper repair by unauthorized technicians.
    g. Products with altered and damaged serial numbers are not entitled to our service.
    h. Other categories not protected under our guarantees.

4. Customers are responsible for the fees regarding transportation of damaged products to our company or to the sales office.
5. To ensure the speed and quality of product repair, please download an RMA application form from our company website www.adlinktech.com. Damaged products with RMA forms attached receive priority.

For further questions, please contact our FAE staff.

ADLINK: service@adlinktech.com

Test & Measurement Product Segment: NuDAQ@adlinktech.com

Automation Product Segment: Automation@adlinktech.com

Computer & Communication Product Segment: NuPRO@adlinktech.com; NuIPC@adlinktech.com